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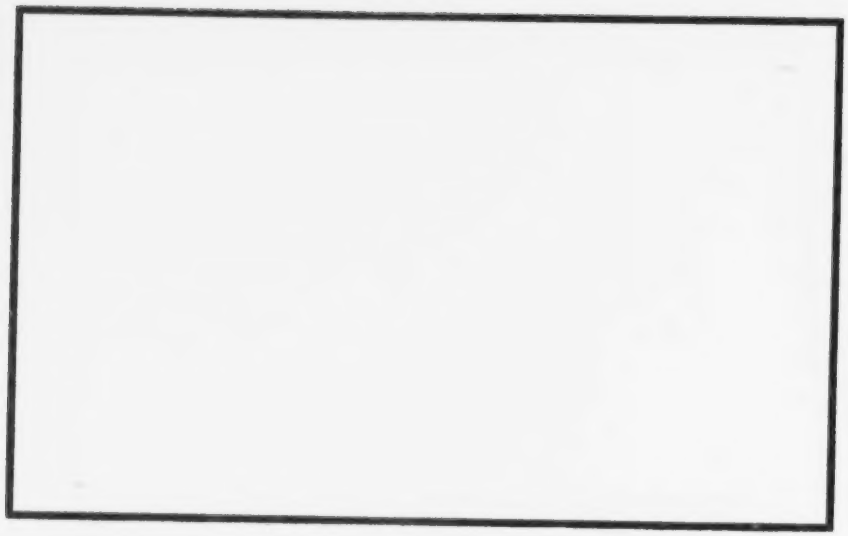
AESTRACT

Rather than adding more and more programs for special education and more and more special personnel, the new Texas State Plan for Special Education emphasizes attention to the needs of exceptional children within the normal classroom whenever possible. Part of this program is the inservice training of regular teachers so that they can provide the special help exceptional children need. While computer-assisted instruction might be an excellent mode of instruction for exceptional children, the course reported and evaluated here provided inservice training in special education for regular teachers. (RH)



THE UNIVERSITY OF TEXAS AT AUSTIN

Computer Assisted Instruction Laboratory

AUSTIN

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EVALUATION OF CARE 1 FOR PROJECTED USE AT THE UNIVERSITY OF TEXAS

Agnes Edwards and Wilson A. Judd

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EVALUATION OF CARE 1 FOR PROJECTED USE AT THE UNIVERSITY OF TEXAS

I. Special Education and its Challenge to CAI Training

The goal of special education is to make available to every child, regardless of his special requirements, quality education, consistent with his capacity to learn. Current programs, however, fall grossly short of this goal. According to one estimate, "less than half the children who need highly specialized services are receiving them." (Reynolds, 1971, p. 421) The problem is greater than is generally realized. Robert Montgomery, Commissioner of Special Education for the State of Texas, has estimated that 35% of the entire school population is eligible for special education services under the new Texas State Plan. Robert Weber (1970, p. 9), taking a comprehensive view of exceptional children, places the national figure as high as 45%.

Traditionally, when existing educational programs fail to adequately serve a designated population, the patent response has been to demand more programs and more instructors. Multiplying existing programs, however, only intensifies the already substantial problem of personnel shortages. Montgomery estimates that there is a need for 1,300 to 1,500 staff members trained in the area of early childhood special education for Texas alone. The need for trained personnel has every appearance of becoming even more severe as recognition of the problem of exceptionality and demands for adequately staffed programs increase. Colleges of Education are faced with an increasingly acute dilemma. Having failed to train a sufficient number of personnel for existing demands, colleges

are now called upon to meet an accelerated demand, and this without any basic adjustments to the training program.

The new Texas State Plan for Special Education (1970) reflects a fundamental change in the approach to educating the exceptional child. The Plan emphasizes attention to the specific individual needs, while deemphasizing the categorization of exceptional children. It is more comprehensive than current approaches, significantly broadening the definition of exceptionality. The Plan recognizes the general failure of attempting to segregate exceptional children in special classrooms, while emphasizing the positive gains to be realized by placing these children in a normal classroom situation wherever possible. While this approach at first appears to promise to alleviate the personnel training problem by reducing the required number of special education teachers, the actual result is merely to transfer the need for special education teaching skills to the regular teacher and to ancillary personnel. The burden of special education is not lessened; it is simply redistributed. For the regular classroom teacher this implies the necessity for new skills in an area which is covered only superficially, if at all, by most college teacher training curricula. This, in turn, implies a need for inservice training. For the colleges and universities it means developing programs which will effectively and efficiently provide the needed training. Again, existing programs have failed to meet the demand. It is time for colleges to reexamine current methods and to investigate alternative means of meeting the challenge clearly before them.

New approaches today often involve the fuller utilization of technology, which has been much advocated for education generally. Recently, the Commission

on Instructional Technology (1970) issued an extensive set of guidelines and recommendations for the greater use of technology. Directly or indirectly, this and similar efforts are based upon two major assumptions: that technology is a potent source of assistance in education, and that the potential is still largely untapped. Indeed, the history of technology in education is largely that of much promise and little realization. The net effect of most efforts for the practical introduction of technology into education has been little more than a reaffirmation of the promise. This promise persists. Nowhere is it greater though than in special education. Special education is, by its very nature, most challenging. It also requires a high teacher-pupil ratio, resulting in extraordinary personnel costs. The use of technology stands the best chance not only of improving special education but of doing so on an economically competitive basis. At this time it is difficult to conceive of any technological development of greater potential benefit to special education than the computer.

That the computer as an educational tool is capable of achieving superior results has been demonstrated repeatedly. For special education, the computer offers several unique advantages. The remote capability of computer instruction, by the use of data phones, is particularly well suited for teaching a child with limited mobility. Computer-assisted instruction (CAI) is thus capable of providing quality education to homebound students and to students living in small communities and remote areas. Since many children could be served in their home communities, thus eliminating the need for transportation and boarding costs, remote education via CAI has a special appeal in cost

effectiveness. Of less tangible but possibly even greater importance, CAI could eliminate the need for reestablishing vital social structures by allowing some students to remain at home with their families and accepting peers.

A second major advantage of CAI for special education is the variety of display and response detection devices. These devices can be uniquely adapted to meet the needs of individual children. A film projector in combination with a cathode-ray tube (CRT) display provides extensive flexibility for visual displays. Computer graphics enable an instructional designer to enlarge and modify visual presentations for children with perceptual difficulties. Random access audio has proven to be very useful in teaching concepts to non-reading children. For example, program REHAB, designed to teach mentally retarded teenagers (mostly Mexican-American) the value of money, provides bilingual instruction; the student may listen to the instructions in Spanish or English, or in both languages as he desires (Knutson & Prochnow, 1970). Braille typewriters and audio devices make CAI feasible for blind students. Response detection devices can also be adapted to meet the various special needs of students. The use of a light pen has proved useful with young and non-reading children. Keyboards can easily be adapted for children with poor motor coordination. It is anticipated that systems available in the not too distant future will be able to recognize vocalized responses.

The central, most important advantage of CAI, however, is its capacity for self-paced, individualized instruction, which is the heart of special education. CAI takes into account achievement differences as well as individual differences. It can provide additional drill and tutorial instruction for the slow learner while providing the fast learner with the opportunity to study

materials in greater depth. Work with program REHAB has shown that a few mentally retarded children repeated some exercises more than 20 times before being able to master a given concept. In such cases, the computer acts as a patient, unemotional tutor. For emotionally disturbed children who have difficulties with interpersonal relationships, the opportunity of working with an interface which shows no emotion can be distinctly advantageous. Alternately, CAI can also allow for teamwork, allowing two students to work together on a terminal, fostering communication between persons as well as between person and subject matter.

Since all student responses can be recorded, retrieved and categorized by means of data processing techniques, CAI program evaluation and revision is greatly facilitated. Analysis of frequently-made errors enables the instructional designer to detect and revise areas of weakness in the program. The continuous feedback provided by CAI furnishes designers with optimal possibilities for meeting the precise needs of the students. In addition, the detailed analysis of students' performance possible with CAI programs opens new areas of educational research, providing a ready tool to test learning and instructional theories effectively in an applied context.

Whether the advantages of CAI can be realized at a cost competitive with that of conventional teacher instruction has yet to be demonstrated. Indications are, however, that CAI can be competitive in cost with teacher-administered instruction (TAI) if offered to a large student population. Kopstein and Seidel (1969, p. 348) point out that, "Costs per student hour tend to become less as the capacity of the facility increases, even though the increasing capacity presumes an increasing investment." These authors, comparing the cost of CAI and

TAI, predict that in less than ten years CAI costs, including the development of some 600 courses, will be about half the cost of comparable TAI. Bunderson, in a cost comparison between CAI presented by the IBM 1500 system and a traditional course in precalculus mathematics, has shown that, for 1,500 students and a five-year projection, the cost of CAI would be substantially less than that of TAI (Bunderson, 1970). Obviously, since special education is traditionally high-cost education, the possibility for a favorable cost advantage of CAI is significantly enhanced.

In sum, it is felt that CAI has good potential as an effective and price competitive tool of education. Its unique advantages and greater possibility for cost competitiveness make the area of special education most attractive for CAI development.

II. CARE 1

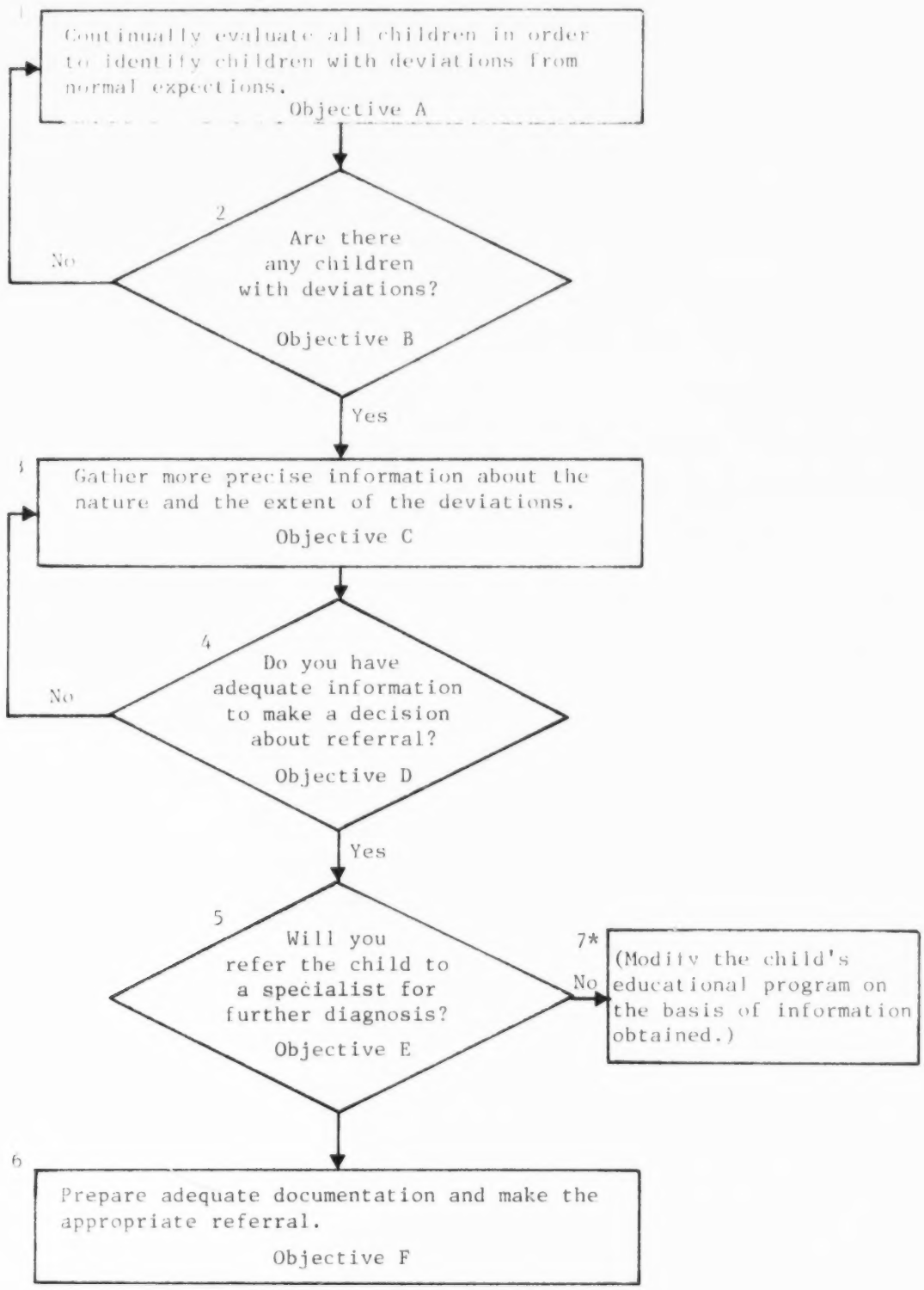
The CARE 1 course, developed under the direction of G. Phillip Cartwright and Harold Mitzel at The Pennsylvania State University, is a special education general survey course addressed primarily to the problem of training inservice teachers. The developers have instituted a mobile dissemination process (by van) which is particularly useful for reaching a widely scattered population, as are many teachers in need of special education training. If mobile distribution proves feasible, the practical implementation of widescale special education training could become a reality. This may be considered the most immediate attraction of the CARE 1 course. In a broader sense, CARE 1 is significant because it is a computer course and, as such, constitutes a concrete example of the utility of technology in special education. If, through their own

training in the CARE 1 course, teachers gain a better appreciation of the potential of CAI in the service of special education teaching itself, then CARE 1 will have served doubly.

CARE 1 is the first of a series of CAI courses for special education, a series which is expected ultimately to form a complete program. CARE 1 was financed by a grant from the Division of Research, Bureau of Education for the Handicapped, United States Office of Education, Project No. 48-2129, Grant No. OEG-0-9-482129-4394(032). A general survey course, CARE 1 concentrates on the identification of educationally handicapping conditions in school children. Like subsequent courses projected for the series, CARE 1 is a complete college level course. It is designed especially for inservice teachers of preschool and primary levels; but the course will benefit teachers of all grade levels, as well as principals or administrators, psychologists, school nurses, special class supervisors, and any other personnel whose work entails a need for knowing the characteristics of educationally handicapped children and the ability to identify these children. As used in this course, the term "educationally handicapped," or simply "handicapped," applies to those children who have atypical conditions or characteristics which have relevance for educational programming. Handicapped children include children who display deviations from normal behavior in any of the following domains: (1) cognitive, (2) affective, and (3) psychomotor.

Upon completion of the CAI course, participants will have achieved the following objectives that are directly correlated with the decision process flowchart shown in Figure 1. Participants should:

1. know the characteristics of handicapped children and be aware of symptoms which are indicative of potential learning problems;



*This step is the subject of a CAI course to be developed.

Figure 1--Decision process.

2. be able to screen all children in regular classroom programs for deviations and determine the extent of inter-individual differences;

3. be able to select and use appropriate commercial and teacher-constructed appraisal and diagnostic procedures for those children with deviations in order to obtain more precise information related to the nature of the deviation;

4. be able to synthesize information by preparing individual profiles of each child's strengths and weaknesses of educationally relevant variables;

5. be able to evaluate the adequacy of the available information in order to make appropriate decisions about referral to specialists;

6. be able to prepare adequate documentation for a child if the decision to refer is affirmative.

Trainees who will have mastered the above listed competencies should be able to systematically evaluate children's learning potential and to formulate appropriate educational plans according to a decision-making process outlined in the flowchart in Figure 1.

CARE 1 is a complete course. As no previous instruction in problems of the exceptional child is assumed, the course supplies pertinent basic information. Likewise, no previous experience with the computer is assumed for the trainee; the course begins with an elementary familiarization exercise, with complete instructions. From beginning to end, the course is designed to facilitate maximum independence from the need for external assistance to the student. The student is provided with a CARE 1 kit which consists of various standard screening instruments, which he is to complete at prescribed stages, and a 400-page Handbook, designed to closely follow the computer course, with greater elaboration of the materials. Study of the Handbook constitutes the student's

major task when he is not working with the computer. The CARE 1 course is divided into chapters, the exact number varying with continuing revision but numbering approximately 22, each chapter organized to stand as a more or less identifiable unit. This affords a ready index for the student as he progresses through the course. Both the Handbook and the CAI component (via the CRT and image projector) provide numerous charts and tests as integral elements of the instructional materials. The CAI component further provides for a summary and final examination on the course content.

III. Preliminary Evaluation of CARE 1

Having established the need for a basic special education course with maximum potential for dissemination, and having tentatively selected CARE 1 as offering not only an extraordinary potential for dissemination but also offering a practical introduction to CAI, the evaluation proceeded to the next logical step, which was to acquire a more thorough evaluation of the course content and presentation. Ideally, this would include considering CARE 1 not only for general academic adequacy but for its specific adequacy for preservice and in-service training.

CARE 1 is a new course. This alone would justify the need for early evaluation; but as CARE 1 also represents a departure from conventional instruction, its practical implementation presents questions of adjustment, both as pertaining to the student and to existing curricula. The course will succeed only as these adjustments succeed. Therefore, a basic concern of the evaluation was to gauge the difficulty of effecting these adjustments. Three evaluation processes were undertaken. During the spring semester of 1971, a group of 13

graduate students in special education, many with teaching experience and all having at least the equivalent of a master's degree in special education, evaluated the course for content and presentation, and rated its probable value for preservice and for inservice training. During the summer of 1971, two groups of inservice teachers, a total of 17, took the course in an intensive program. During the fall semester of 1971, a preservice course employed selected chapters of CARE 1 as an adjunct program.

As basic criteria of content and presentation, the graduate student group considered clarity and comprehension level of the general language; accuracy, depth, scope, and currency of information; interest of presentation style; step size and logical order of technical construction; and the amount of computer time necessary for completing the course. For recording these observations, a detailed form was designed. The evaluators were urged to have these forms constantly at hand, and to complete one immediately upon going through each chapter. To secure the evaluators' full participation, course credit was given by the Department of Special Education. Since the overriding concern of the evaluation was to secure comments uninhibited by any consideration of course credit, however, it was made known at the outset that the judged quality of evaluator remarks could in no way influence credit or grade. The evaluation results are felt to have justified this decision.

Most of the evaluators found the course material to be reasonably comprehensive, and presented in an interesting manner. Although the evaluators had no previous experience with CAI, and therefore approached the experience with some trepidation, they quickly adjusted to the new medium. As the course was being run on The University of Texas 1500 system for the first time, technical

problems were uncommonly prevalent. System problems, not problems in the course itself, were the source of most negative comments. All responses, both for the course and the system, were further aired in a final debriefing session. The collected detailed data was collated according to chapter reference and type, and forwarded to the course authors at The Pennsylvania State University, to assist course revision. A representative sample of evaluator comments is included as Appendix A. As these comments indicate, the general estimation of the course, both for inservice and preservice training, was favorable.

Having established the general adequacy of the course content and presentation as well as the probable feasibility of the course for preservice and inservice training, the evaluation proceeded logically to the next step, which was to pilot test the course for its actual reception by the group for which CARE I is primarily designed: inservice teachers. To be sure, The Pennsylvania State program had already run such a pilot test; but, as The University of Texas program is immediately concerned with serving the teachers of Texas, it was felt desirable to test course reception by this specific population. The single question of greatest concern was whether these teachers, trained by conventional instruction and many having a long career in their own application of conventional training, would adjust to CAI.

El Paso, Texas, was one of the first school districts in the state integrating exceptional children into regular classrooms in accordance with the new Texas Special Education Plan. To assist regular teachers in coping with this new situation, the Educational Service Center of Region XIX, under the direction of Dr. Jim Yates, conducted an inservice teacher training workshop. Seventeen

workshop participants, in two groups, of nine and eight, took the CARE 1 course at The University of Texas at Austin under the sponsorship of the Regional Service Center. All were inservice teachers and all had had practical teaching experience with exceptional children. Several were teaching special education classes. It is of particular interest that, due to a very restricted schedule, all participants completed the course within ten days, spending from three to five hours daily on the terminals. In addition, each participant attended a daily one-hour discussion group, where the course content, especially as it applied to problems in the participants' own teaching experience, was considered. Outside work consisted almost entirely in the study of the Handbook and testing kits. A supplemental text, Teacher Diagnosis of Educational Difficulties by R. M. Smith (1969), was also made available.

Total individual time spent on the terminal ranged from 21 hours 40 minutes to 36 hours 20 minutes, the mean being 27 hours 15 minutes.

All teachers filled out the Student Opinion Survey (SOS) developed by The Pennsylvania State Laboratory. The Survey is a 42-item questionnaire administered on-line following the final examination. It deals with statements about trainee attitudes toward computer-assisted instruction, the operation of the equipment, likes and dislikes of the course, and trainees' feelings in general about the learning situation. Each of the items is rated on an eight-point scale, with one being the least and eight being the most favorable score. The neutral score of the Student Opinion Survey is 189, with scores lower expressing a negative attitude, and scores higher expressing a positive attitude. The El Paso group expressed a relatively favorable opinion, with a mean score

of 241.4, and a range from 181 to 294. (A detailed listing of item scores can be found in Appendix B.)

The final examination containing 75 short write-in and multiple choice questions was administered on-line. The mean score for the El Paso group was 61.7, with a range from 48 to 73.

IV. Preservice Teacher Training Evaluation

Having established the feasibility of CARE 1 for inservice teacher training, the evaluation proceeded to test the course with preservice students. There were two primary concerns at this point: first, the efficacy of CAI, as represented by CARE 1, compared to conventional instruction (TAI), and second, how well this CAI course worked in combination with TAI. This second concern is felt to be especially important, as the practical introduction of CAI for preservice training is likely to be first as an adjunct to conventional TAI courses.

During the fall semester of 1971, a major part of CARE 1 was offered as an adjunct to a regular course, Special Education 332E, "Behavioral Science Foundations of Elementary Education." Specific chapters of CARE 1 were assigned according to various topics covered in Special Education 332E. The actual assignment is included as Appendix C. CARE 1 chapters covering material not included in the Special Education 332E course were omitted. To facilitate this departure from the integral course order, the selection of individual chapters was placed under student control.

The 69 students registered for the course were randomly assigned to one of three groups. All three groups attended the class lecture sessions. In addition, each student from groups A and B received an abridged CARE 1 Handbook

containing only the selected chapters. Group A worked on-line with the computer on the CARE 1 material, while groups B and C met in weekly one-hour discussion group sessions. No CARE 1 material was available to group C. Only 63 students, 21 in each group, completed the experiment. The evaluation design is summarized in Table 1.

Students from group A spent an average of 12 hours 42 minutes on the computer terminals, with a range from six hours 45 minutes to 31 hours 19 minutes.

Parallel forms of a paper and pencil test were developed to measure student progress. Each form consisted of 100 questions, there being a total of 200 questions for both forms. For greater objectivity, existent questions were used, 100 being drawn from previously administered examinations for the course Special Education 332E, and 100 from the final examination pool of the CARE 1 course. These questions were restricted to the material covered in the chapters selected for study. From the lot of 200, questions were paired according to content and type, and then one question from each pair was randomly assigned to each of the forms to assure close similarity of the two tests. Thus, each test form consisted of 50 class lecture questions and 50 questions from the CARE 1 course. One form was administered as a pretest to all students at the beginning of the semester, the other as a posttest on the last day of classes. From each form three scores were obtained for each student: the number of questions answered correctly from the lecture part, the number of questions answered correctly from the CARE 1 part, and the total number of questions answered correctly.

Internal reliability coefficients, Kuder-Richardson 20, were computed for the pretest and the posttest, yielding values of .71 and .73 respectively.

Table 1

PRESERVICE EVALUATION DESIGN

FOR CARE 1

Group A	Lecture
	Handbook
	CAI
Group B	Lecture
	Handbook
	Discussion Session
Group C	Lecture
	Discussion Session

Analysis of variance was used to control for initial group differences, with the pretest scores serving as control variable. An assumption of covariance is that the group regressions for the dependent variable (posttest) on the control variable (pretest) are linear and that the regression slopes are homogeneous. A test for homogeneity of regression indicated that observed differences among slopes would be expected on the basis of chance (p = .76, .46, and .81 for the lecture part, the CARE 1 part, and the total test score, respectively).

Pre- and posttest scores for the lecture portion of the tests are shown in Table 2. While there were slight posttest score differences between the groups, indicating an advantage for the CAI treatment and for the use of the CARE 1 Handbook, these differences were not significant (p = .26).

A significant difference (p = .0001) was found between the adjusted group means for the CARE 1 section of the test. The data, shown in Table 3, indicate that group A, which received the CAI treatment, scored substantially higher than did groups B and C. The latter two groups differed only slightly in terms of posttest scores.

As shown in Table 4, a comparison of the adjusted means of the total test scores indicates that group A's mean is again significantly higher (p = .0016) than the means of groups B and C.

Figure 2 shows a plot of the group regression lines for the total test scores. The end points of the regression lines are plus and minus two standard deviations from the group mean. It may be concluded that the use of the CARE 1 program contributed to improved student performance relative to the discussion groups. The use of the CARE 1 Handbook had no appreciable influence on student performance.

Table 2

PRE- AND POSTTEST SCORES ON LECTURE PORTION OF TEST

	Pretest Covariable		Posttest Variable		
Group	Mean	Sigma	Mean	Sigma	Adjusted Mean
A	28.95	3.90	34.19	3.43	34.17
B	28.95	4.04	33.05	3.93	33.02
C	28.81	4.27	32.38	4.13	32.42

F = 1.36 with 2 and 59 df
p = .2625

Table 3

PRE- AND POSTTEST SCORES ON CARE 1 PORTION OF TEST

	Pretest Covariable		Posttest Variable		
Group	Mean	Sigma	Mean	Sigma	Adjusted Mean
A	25.40	4.85	31.43	4.55	30.85
B	24.00	4.41	26.05	3.88	26.29
C	23.86	3.55	27.09	3.18	27.42

F = 12.04 with 2 and 59 df
p = .0001

Table 4

PRE- AND POSTTEST SCORES ON COMPLETE TEST

	Pretest Covariable		Posttest Variable		
Group	Mean	Sigma	Mean	Sigma	Adjusted Mean
A	54.36	7.19	65.62	6.98	64.96
B	52.92	7.49	59.10	7.14	59.33
C	52.67	6.81	59.48	6.22	59.90

F = 7.47 with 2 and 59 df
p = .0016

Figure 2--Group regression lines for total test scores.

In addition to the pretest and the posttest, the Student Opinion Survey (SOS) was administered to group A as a paper and pencil test. A parallel form of the SOS oriented toward group discussion was developed for groups B and C. These surveys were administered at the end of the semester. The mean score for group A was 210.14, with a range from 138 to 298. Of the 22 students filling out the SOS, 14, or 64%, expressed a favorable opinion toward CAI, with scores above 189. The mean score for groups B and C combined was 227.1, with a range from 117 to 289. The frequency distributions of these scores are shown in Table 5 for group A and for combined groups B and C.

Ninety percent of the students in groups B and C expressed a favorable opinion toward the discussion group sessions. Appendix B gives a comparison of SOS scores for group A, groups B and C, and the inservice teacher training group.

V. Summary and Recommendation

The challenge to teacher training institutions presented by the rapid rise in the need for special education skills demands greater interest in the practical assistance of technology. Computer-assisted instruction (CAI) offers advantages particularly applicable to special education. Computer-Assisted Remedial Education (CARE 1), a basic special education course developed by Pennsylvania State University, is an outstanding practical application of CAI to the problem at hand. The University of Texas Computer-Assisted Instruction Laboratory has evaluated the suitability of CARE 1 for preservice and inservice teacher training.

Table 5

FREQUENCY DISTRIBUTION OF STUDENT OPINION SURVEY RESPONSES

SOS Score (Neutral Score = 189)	Group A Frequency	Groups B and C Frequency
110-129	0	1
130-149	3	0
150-169	1	1
170-189	4	2
190-209	3	7
210-229	4	8
230-249	2	11
250-269	2	6
270-289	2	4
290-309	1	0
	N=22	N=40

Three evaluations were conducted. A group of advanced graduate students in special education did an informal chapter-by-chapter evaluation of course content and presentation. Projections for the course were generally favorable. A group of inservice teachers were then given the course, the primary concern being how well they accepted it. Overall reception was very favorable. A third evaluation was made to test the course for preservice training. Two primary concerns were to measure the efficacy of CAI as represented by CARE 1, compared to conventional instruction, and to determine how well CARE 1 could work in combination with conventional instruction. This evaluation was formal with a CAI group being contrasted with two control groups. Although it is not the most effective use of the program, it was found that CARE 1 could be used in conjunction with a conventional course. The performance of the CAI group, as measured by posttest score, was significantly better ($p = .0016$) than that of the control groups. Although the reception of the program by these students was less favorable than its reception by inservice groups, the overall projection for the use of CARE 1 at The University of Texas at Austin was judged to be favorable.

Two aspects of this evaluation are particularly noteworthy. First is independence. Although The Pennsylvania State University CAI Laboratory has conducted evaluations of CARE 1, The University of Texas evaluation was deliberately and consistently isolated from influence of findings elsewhere. Second is the broader application of CARE 1 in this evaluation. Although CARE 1 was designed primarily for the training of inservice teachers, this evaluation shows that the course is also applicable to preservice training, and can be used as an adjunct to an existing conventional course.

The results of this evaluation would appear to justify widescale dissemination which promises to make CARE 1 cost effective.

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APPENDIX A

APPENDIX A

Evaluation Comments by

Special Education Graduate Students

"The CARE 1 course and the principles involved offer limitless possibilities. I am particularly excited over its potential for inservice education. Traditionally inservice education has been a horrible bore, with little in tangible results for most teachers. With CARE 1 a teacher can not only learn new material, but new skills also. Teachers would feel they had accomplished something and not wasted their time.

"The content of the course bothers me in some ways, but I'm unsure about changing it. Many people voiced discontent over this aspect at our final meeting. Out-and-out errors which exist and can be documented should be corrected. However, any book written (also this course) will find people reading it who do not agree due to differences in training, background and experience. Many prominent authorities within the field of special education have totally different outlooks and theories--obviously a course such as CARE 1 will have to try to introduce the most generally accepted current concepts. Hopefully the introduction coupled with the bibliography will challenge people to continue reading in the field on their own.

"I agree that the CARE 1 course would be of real value in introducing teachers to the use and potential of CAI."

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"I was quite favorably impressed with the CARE 1 course as a whole. In most areas, the material was well organized and accurately presented. As presented, the material was very pertinent to teachers and should be quite helpful. Models such as the information processing model should prove valuable as a scheme for organizing information. I enjoyed working with the computer. It offers several advantages often not available in traditional instruction. Being able to work at my own pace and choose the time for my instruction made instruction more convenient. For a survey type course, this may be the most efficient means of disseminating the large amounts of information necessarily involved.

"More examples in almost all areas of instruction would be helpful in clarifying points. I felt that there were not enough opportunities for optional review within the course. However, when reviews were provided they were most times simply repeated instruction. Reviews could be more productive if they were presented in a different manner than the regular course instruction. One obvious drawback of the course was that I couldn't ask questions to clarify points or to increase understanding. One possible improvement might be to provide optional program loops for enrichment in particular areas. At times, the program seemed too mechanistic, but this is a hard thing to define."

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"I think that teaching via computer-assisted instruction is one of the most promising applications of technology in the field of education. However, CARE 1 did not utilize many of the advantages of this technique. The visual displays were usually not appealing and were often duplications of charts, diagrams, etc., presented in the handbook. Auditory presentations were often too long and tended to become boring, especially when they were exact duplications of what was written in the handbook. Of course, branching would have added considerably to the appeal of the program.

"I think that the basic information presented in CARE 1 would be very helpful to teachers. However, I would like to see adjustments (such as those previously mentioned) so that the program would be more appealing and helpful. In addition, errors in information should be corrected, and I feel that there should be less emphasis on terminology. The only chapter that I feel needs to be almost completely redone is the one on cultural deprivation. I do not think that chapter should be presented to teachers. Rather than giving them insights to the 'deprived' child, it would just serve to reinforce stereotypes.

"I think that CARE 1 would be a valuable addition to a teacher training program or good for use in inservice training if it were 'polished up.'"

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"In content the CARE 1 program is excellent. The information for the most part is factual, explanatory and presented in a practical context.

"As a computer-assisted instructional program, CARE 1 is probably too linear with too little opportunity for alternative approaches and for vocabulary depth. These corrections could probably be made to the present program. As far as the simulation exercise must be judged, it is certainly not a true representation of real simulation. This type of exercise could provide valuable experience if written with the breadth and depth required in a true simulation program.

"In summary, CARE 1 was an interesting experience and one which should be required for all teachers. The advent of CARE 2 will be eagerly awaited by this author."

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"In trying to evaluate this CAI course, one must look at the mechanical side and the content area.

"I liked being able to sit in a booth and work alone at my own pace. The proctors were very helpful and patient. The course was on at convenient times for me and scheduling was no problem. The flickering screen was a definite hindrance and so was the light pen which would not work at times. Sometimes the audio and picture were not together and this made it very difficult to follow the course material.

"It is difficult to evaluate the content because none of it was new to me. In trying to look at it from the standpoint of a beginning special education student, I guess I would say it was fairly good. The chapters on reliability, validity and measurement could be left out because this is more completely covered in required tests and measurements courses. It seemed that though the course stressed no right or wrong answers or rigid ones, it demand that type of answer on the little tests. When asked to put down your own definitions it did not even let you complete them, and gave you no feedback on your ideas. For a graduate student with all this basic knowledge there was too much repeat and the course moved too slowly.

"In conclusion I would like to say that I would enjoy taking another CAI course over new material if the mechanics of the computer worked smoothly."

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"I found CARE 1 to be a valuable experience. I entered the Department of Special Education in January, 1971, as a new student in the field. I'd had three years' experience teaching the retarded in two state institutions, yet lacked academic and employment experience with any other area of exceptionality. My academic background has been in social science.

"CARE 1 was a valuable experience for me because in a relatively short period of time it provided exposure to the current categorical areas of exceptionality. The overview it provided enabled me to function more at ease with various terminology and concepts in special education quite early in the semester. I found this 'headstart' to be of value to me in my other graduate courses in special education.

"Taking a course via machine is not as disturbing as I thought it would be, as I rarely experienced frustration or fatigue. Infrequently the machine seemed a bit impersonal or 'narrow,' but the benefits I felt I was deriving from the overview of exceptionalities far outweighed these minor criticisms. On two occasions machine error, not program error, interrupted my progress and these occasions probably represented the most inconveniencing aspects of the course. The usage of several different narrators and alternating usage of the earphones moderated fatigue.

"I have recommended CARE 1 to several new students on the program and feel it should be offered on a credit basis towards bachelor's and master's degrees in education. I would welcome the opportunity to take other CARE courses in various areas of exceptionality and I would encourage their development. Specialized CARE courses in University education departments would best be presented along with a professorial lecture-discussion for an hour period each week or two."

APPENDIX B

APPENDIX B

A DETAILED LISTING OF SOS ITEM SCORES FOR INSERVICE AND PRESERVICE COMPUTER AND DISCUSSION GROUPS

1a. The method by which I was told whether I had given a right or wrong answer became monotonous.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	27	27	13	7	7	13		7
Preservice CAI Fall 1971 (N = 22)	9	9	14	14	18	14	9	14
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

1b. Our group discussions became monotonous.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	10	17	10	7	15	22	13	5
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

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2a. Nobody really cared whether I learned the course material or not.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	80		7				7	7
Preservice CAI Fall 1971 (N = 22)	14	23	14	23	5	9	9	5
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

2b. Nobody really cared whether I learned the course material or not.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	27	35	13	15		2	7	
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

3a. I felt challenged to do my best work.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)		7	7	13		13	20	40
Preservice CAI Fall 1971 (N = 22)	9	18	5	18	18	18	9	5
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

3b. I felt challenged to do my best work.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	7	13	7	10	10	20	27	5
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

- -

4a. I felt isolated and alone.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7	7		13	7	13	20	33
Preservice CAI Fall 1971 (N = 22)		5	9	5	18	14	27	
	All the Time							Never
	1	2	3	4	5	6	7	8

4b. I felt isolated and alone.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)		2		10	2	27	27	30
	All the Time							Never
	1	2	3	4	5	6	7	8

5a. I felt as if someone were engaged in conversation with me.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	20	20	20	20		7	7	7
Preservice CAI Fall 1971 (N = 22)	9	9	18	18	5	23		18
	All the Time							Never
	8	7	6	5	4	3	2	1

5b. I felt I was a genuine participant.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	13	22	17	10	15	17	2	2
	All the Time							Never
	8	7	6	5	4	3	2	1

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6a. As a result of having studied by this method, I am interested in learning more about the subject matter.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7				7		13	73
Preservice CAI Fall 1971 (N = 22)	5	14	9		14	27	23	9
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

6b. As a result of having studied by this method, I am interested in learning more about the subject matter.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	10	5	7	10	10	17	20	20
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

7a. I was more involved in operating the terminal than in understanding the course material.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)				20	20		7	53
Preservice CAI Fall 1971 (N = 22)	5	9	5	5	18	14	14	32
	All the Time							Never
	1	2	3	4	5	6	7	8

7b. I was more involved in adjusting to the group than in understanding the course material.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	2	7	5	13	2	13	30	27
	All the Time							Never
	1	2	3	4	5	6	7	8

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9a. I felt as if I had a private tutor.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7		13		7	7	20	47
Preservice CAI Fall 1971 (N = 22)	18		9	9	23	23	9	9
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

9b. I felt the group served the function of a private tutor.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	23	23	15	10	8	5	8	8
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

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10a. The equipment made it difficult to concentrate on the course material.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)				13	13	20	20	33
Preservice CAI Fall 1971 (N = 22)		5	9	14	5	9	14	45
	All the Time							Never
	1	2	3	4	5	6	7	8

10b. The demands of the group situation made it difficult to concentrate on the course material.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)		5	2		5	7	27	52
	All the Time							Never
	1	2	3	4	5	6	7	8

11a. The situation made me quite tense.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	33	13	27		7	7		13
Preservice CAI Fall 1971 (N = 22)	68	9	5	5	9	5		
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

11b. The situation made me quite tense.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	65	13	5	5	5	5	2	
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

- -

12a. Computer-assisted instruction, as used in this course, is an inefficient use of the student's time.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	67	7		7	7			13
Preservice CAI Fall 1971 (N = 22)	14	18	18	9	14	5	9	14
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

12b. Discussion groups, as used in this course, are an inefficient use of the student's time.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	10	22	7	7	7	10	22	13
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

13a. My feeling toward the course material after I had completed the course was favorable.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)			7	7		7	13	67
Preservice CAI Fall 1971 (N = 22)	5		5	5	18	23	27	18
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

13b. My feeling toward the course material after I had completed the course was favorable.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	3	5		15	3	23	26	26
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

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14a. I felt frustrated by the situation.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	40	20	13			7		20
Preservice CAI Fall 1971 (N = 22)	32	23	9	9	9	5	5	9
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

14b. I felt frustrated in the discussion group.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	51	23		10	3	5	8	
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

15a. I found the computer-assisted instruction approach in this course to be inflexible.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	27		13	13	7	20	13	7
Preservice CAI Fall 1971 (N = 22)	9	9	9	5	18	18	18	14
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

15b. I found the discussion group instruction approach in this course to be inflexible.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	60	25	7		5			2
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

- -

16a. Material which is otherwise interesting can be boring when presented by CAI.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	73	7		7	13			
Preservice CAI Fall 1971 (N = 22)	18	9	14	9	9	18	9	14
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

16b. Material which is otherwise interesting can be boring when presented in a discussion group.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	40	25	7	13	2	5	5	2
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

17a. I was satisfied with what I learned while taking the course.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7	7	7	7	7	13	20	33
Preservice CAI Fall 1971 (N = 22)	14	5	18		18	18	18	9
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

17b. I was satisfied with what I learned while taking the course.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	7	15	15	5	13	20	15	10
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

- -

18a. In view of the amount I learned, this method seems superior to classroom instruction for many courses.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)				20	13	20	7	40
Preservice CAI Fall 1971 (N = 22)	32	14	14	14		9	9	9
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

18b. In view of the amount I learned, this method seems superior to classroom instruction for many courses.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	18	18	3	15	13	15	13	5
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

19a. I would prefer computer-assisted instruction to traditional instruction.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7		13	13	27		7	33
Preservice CAI Fall 1971 (N = 22)	50	9	5	5	5	14	9	5
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

19b. I would prefer discussion groups to traditional instruction.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	15	5	10	8	8	18	15	21
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

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20a. Computer-assisted instruction is just another step toward de-personalized instruction.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	40	20	20	13	7			
Preservice CAI Fall 1971 (N = 22)	9	14	5	14	14	14	23	9
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

20b. The group procedure is just another step toward de-personalized instruction.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 38)	37	24		8	11	13	3	5
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

21a. I was concerned that I might not be understanding the material.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	13	7		7	7	27	33	7
Preservice CAI Fall 1971 (N = 22)	27	5	27	5	9	14	14	
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

21b. I was concerned that I might not be understanding the material.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	15	15	10	10	5	22	13	10
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

- -

22a. The responses to my answers seemed appropriate.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7	20	27	27	20			
Preservice CAI Fall 1971 (N = 22)	18	23	27	5	14	9	5	
	All the Time							Never
	8	7	6	5	4	3	2	1

22b. The group responses to my remarks seemed appropriate.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	5	26	21	23	10	5	3	8
	All the Time							Never
	8	7	6	5	4	3	2	1

23a. I felt uncertain as to my performance in the programmed course relative to the performance of others.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7	7	20	13	7	13	20	13
Preservice CAI Fall 1971 (N = 22)	5	18	18	18	9	9	5	18
	All the Time							Never
	1	2	3	4	5	6	7	8

23b. I felt uncertain as to my performance in the discussion group relative to the performance of others.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	2	13	5	20	13	15	17	15
	All the Time							Never
	1	2	3	4	5	6	7	8

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24a. I was not concerned when I missed a question because nobody was watching me.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)	7	20		13	7	13		40
Preservice CAI Fall 1971 (N = 22)	18	5	18		9	14	18	18
	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	8

24b. I felt uninhibited participating in a group situation.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	2		10	13	2	15	30	27
	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	8

25a. I found myself trying to get through the material rather than trying to learn.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 15)		7	13	27		7	13	33
Preservice CAI Fall 1971 (N = 22)	14	14	18	23	5	18		9
	All the Time							Never
	1	2	3	4	5	6	7	8

25b. I found myself trying to get through the material rather than trying to learn.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)		2	13	10	10	5	32	27
	All the Time							Never
	1	2	3	4	5	6	7	8

- -

26a. I knew whether my answer was right or wrong before I was told.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)		13		19	37	13	19	
Preservice CAI Fall 1971 (N = 22)	5		9	23	23	23	18	
	All the Time							Never
	1	2	3	4	5	6	7	8

26b. I usually felt whether or not my comments were appropriate before getting feedback from the discussion group.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	5	5	13	3	26	21	21	8
	All the Time							Never
	1	2	3	4	5	6	7	8

27a. In a situation where I am trying to learn something, it is important to me to know where I stand relative to others.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	44	19	13		19	6		
Preservice CAI Fall 1971 (N = 22)	27	23	5	9	14	9	9	5
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

27b. In a situation where I am trying to learn something, it is important to me to know where I stand relative to others.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	13	7	7	15	5	20	22	10
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

- -

28a. I guessed at the answers to some questions.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)		6	6	25	19	19	25	
Preservice CAI Fall 1971 (N = 22)		9	27	23	18	9	9	5
	All the Time							Never
	1	2	3	4	5	6	7	8

28b. I guessed at the answers to some questions.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)		5	17	45	13	2	7	10
	All the Time							Never
	1	2	3	4	5	6	7	8

29a. I was aware of efforts to suit the material specifically to me.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	13	19	25	6	13	19	6	
Preservice CAI Fall 1971 (N = 22)	9	23			5	27	14	23
	All the Time							Never
	8	7	6	5	4	3	2	1

29b. I was aware of efforts to suit the material specifically to me.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)		15	13	22	15	20	10	5
	All the Time							Never
	8	7	6	5	4	3	2	1

- -

30a. I was encouraged by the responses given to my answers to questions.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	6		6	6		37	37	6
Preservice CAI Fall 1971 (N = 22)	9	5	9	9	32	23	5	9
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

30b. I was encouraged by the responses given to my answers to questions.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	5	13	8	13	15	15	18	13
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

31a. In view of the time allowed for learning, I felt too much material was presented.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	13	6		6	13		25	37
Preservice CAI Fall 1971 (N = 22)	27	18	23	9	5	9	5	5
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

31b. In view of the time allowed for learning, I felt too much material was presented.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	31	18	15	10	8	15	3	
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

- -

32a. I entered wrong answers in order to get more information from the machine.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)		6	25	13	6	6	13	31
Preservice CAI Fall 1971 (N = 22)			14	9	5	9	36	27
	All the Time							Never
	1	2	3	4	5	6	7	8

32b. I asked questions in order to get more information from the group.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	8	23	15	18	8	5	18	5
	All the Time							Never
	1	2	3	4	5	6	7	8

33a. I felt I could work at my own pace.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	13	13	6	6	19	13	31	
Preservice CAI Fall 1971 (N = 22)	5	5	5	14	5	9	14	45
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

33b. I felt I could work at my own pace.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	2	7	10	13	2	10	32	22
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

- -

34a. Questions were asked which I felt were not related to the material presented.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	6				13	31	50	
Preservice CAI Fall 1971 (N = 22)		5	9	14	14	27	32	
	All the Time							Never
	1	2	3	4	5	6	7	8

34b. Questions were asked which I felt were not related to the material presented.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	13	17	22	10	10	5	13	10
	All the Time							Never
	1	2	3	4	5	6	7	8

35a. I was aware of the flickering screen while I was taking the course.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	13		13	25	13	19		19
Preservice CAI Fall 1971 (N = 22)	9	5	14	14	9	9	27	14
	All the Time							Never
	1	2	3	4	5	6	7	8

35b. I was aware of certain distractions during discussion groups.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	7	22	22	17	5	17	5	2
	All the Time							Never
	1	2	3	4	5	6	7	8

- -

36a. Material which is otherwise boring can be interesting when presented by CAI.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)			6	19		19	19	37
Preservice CAI Fall 1971 (N = 22)	14	14	5	14	27	23		5
	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	8

36b. Material which is otherwise boring can be interesting when presented in a discussion group.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	7	5	5	2	10	13	27	30
	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	8

37a. I could have learned more if I hadn't felt pushed.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	13	6	6	13	25	19	19	
Preservice Fall 1971 (N = 22)	36	18	18	14	5	5	5	
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

37b. I could have learned more if I hadn't felt pushed.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	32	25	13	15	13	2		
	Strongly Disagree						Strongly Agree	
	8	7	6	5	4	3	2	1

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38a. I was given answers but still did not understand the questions.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	6	19	13	6	19	31	6	
Preservice CAI Fall 1971 (N = 22)	5	14	9	14	18	32	9	
	All the Time							Never
	1	2	3	4	5	6	7	8

38b. I was given information but still did not understand the material.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	3		13	18	8	21	28	10
	All the Time							Never
	1	2	3	4	5	6	7	8

39a. The course material was presented too slowly.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	6	19	6	25	6	6	31	
Preservice Fall 1971 (N = 22)	18	23	5	14	14	18	9	
	All the Time							Never
	1	2	3	4	5	6	7	8

39b. The course material was presented too slowly.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	5	10	5	15	7	20	27	10
	All the Time							Never
	1	2	3	4	5	6	7	8

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40a. The responses to my answers seemed to take into account the difficulty of the question.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	6		13	13	44	6	19	
Preservice CAI Fall 1971 (N = 22)		5	9	14	36	9	18	9
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

40b. Group discussions seemed to take into account the difficulty of the material.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	13	15	8	21	10	13	13	8
	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	8

41a. While on computer-assisted instruction, I encountered mechanical malfunctions.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	6	6	13	13	25	25	13	
Preservice Fall 1971 (N = 22)	14	23	9	18	14	9	9	5
	All the Time							Never
	1	2	3	4	5	6	7	8

41b. I encountered difficulty making myself understood during group discussion.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 40)	2		10	2	20	50	15	
	All the Time							Never
	1	2	3	4	5	6	7	8

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42a. Computer-assisted instruction did not make it possible for me to learn quickly.

Group	Frequency in Percentage							
Inservice Summer 1971 (N = 16)	44	25	13	6	6			6
Preservice CAI Fall 1971 (N = 22)	18	18	9	5	27	5	14	5
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

42b. Discussion group instruction did not make it possible for me to learn quickly.

Group	Frequency in Percentage							
Preservice Control Fall 1971 (N = 39)	21	21	13	13	5	15		13
	Strongly Disagree							Strongly Agree
	8	7	6	5	4	3	2	1

APPENDIX C

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CARE 1 Assignments for Special Education 332E

Topic I: Approaches to the Study of Human Behavior

Chapter IV GATHERING INFORMATION ABOUT CHILDREN
pp. 49-53.

Chapter XV PROFILES OF INDIVIDUAL DIFFERENCES

Chapter XIV INDIVIDUAL DIFFERENCES AND NORMALITY
This chapter is optional.

Topic II: Biological Bases for Behavior

Chapter II INFORMATION PROCESSING MODEL

Chapter IX VISUAL PROBLEMS
pp. 141-150, vision screening section is optional

Chapter X HEARING PROBLEMS

Chapter XI SPEECH PROBLEMS

Chapter XII MOTOR, PHYSICAL, AND HEALTH PROBLEMS
pp. 185-197.

Topic III: Cultural Influences on Behavior

Chapter VII THE DISADVANTAGED

Chapter VI MENTAL RETARDATION
optional.

Topic IV: Emotional and Personality

Chapter VIII EMOTIONAL DISTURBANCE

Topic V: Learning Processes and Behavior

Chapter XIII LEARNING DISABILITY

Chapter XVIII DOCUMENTATION AND REFERRAL PROCEDURES

Topic VI: Intelligence and Educational Achievement

Chapter VI MENTAL RETARDATION

Chapter XVI RELIABILITY, VALIDITY, AND USABILITY